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Claims

[c1] A method of preparing a polymer-carbon nanotube composite, the method comprising:
deinhibiting a monomer;
dispersing carbon nanotubes in the deinhibited monomer;
adding an initiator to the resulting dispersion;
polymerizing the monomer in the presence of the dispersed nanotubes to form a composite; and
dissolving the resulting composite in a solvent.

[c2] The method of claim 1, wherein the carbon nanotubes are selected from the group consisting of single wall and multi-wall nanotubes.

[c3] The method of claim 1, wherein the carbon nanotubes are pure single-walled carbon nanotubes.

[c4] The method of claim 1, wherein the monomer is a vinyl monomer.

[c5] The method of claim 1, wherein the monomer is methyl methacrylate.

[c6] The method of claim 5, further comprising the step of

deinhibiting the monomer by removing the inhibitor in the methyl methacrylate monomer utilizing monoethyl ether hydroquinone inhibitor remover.

[c7] The method of claim 1, whereby dispersing the nanotubes is affected through sonication.

[c8] The method of claim 1, whereby the initiator creates free radicals to initiate the polymerizing step.

[c9] The method of claim 1, wherein the initiator is substantially transparent.

[c10] The method of claim 1, wherein the initiator is an α, αdialkyl derivative of αhydroxyalkylphenone.

[c11] The method of claim 1, wherein the initiator is 1-phenyl-2-hydroxy-2-methyl-1 propanone.

[c12] The method of claim 1, wherein adding the initiator further comprises bubbling nitrogen gas through the dispersion.

[c13] The method of claim 1, wherein polymerizing is achieved utilizing a method selected from the group consisting of ultraviolet light, thermal heating, and Ionizing gamma radiation.

[c14] The method of claim 1, where the solvent is methylene

chloride.

[c15] The method of claim 14, whereby a 5% solution was prepared by dissolving the composite in methylene chloride .

[c16] The method of claim 1, further comprising the step of filtering the solvent prior to the dissolving step.

[c17] The method of claim 1, further comprising post-curing the composite prior to the dissolving step.

[c18] The method of claim 1, further comprising isolating the nanocomposite by removal of the solvent after the dissolving step.

[c19] A method of preparing a polymer-carbon nanotube composite, the method comprising:
deinhibiting a methyl methacrylate monomer;
placing single-wall carbon nanotubes into the deinhibited monomer, forming a nanotube mixture;
sonicating the nanotube mixture for a duration sufficient to disperse the nanotubes in the monomer;
placing the dispersed mixture into a reaction vessel;
adding a 1-phenyl-2-hydroxy-2-methyl-1 propanone initiator to the reaction vessel;
bubbling nitrogen gas through the mixture for a duration sufficient to allow for a nitrogen environment in the

mixture;

polymerizing the monomer in the presence of the dispersed nanotubes to produce a composite; and

dissolving the resulting composite in methylene chloride.

[c20] The method of claim 19, whereby a monomethyl ether hydroquinone inhibitor is removed from the methyl methacrylate monomer to deinhibit the monomer.

[c21] The method of claim 19, where the single-walled carbon nanotubes are 0.26% pure single-walled carbon nanotubes.

[c22] The method of claim 19 wherein polymerizing is achieved utilizing a method selected from the group consisting of ultraviolet light, thermal heating, and gamma radiation.

[c23] A substantially optically transparent polymer carbon nanotube composite produced according to the process of claim 1.

[c24] A substantially optically transparent polymer carbon nanotube composite produced according to the process of claim 19.